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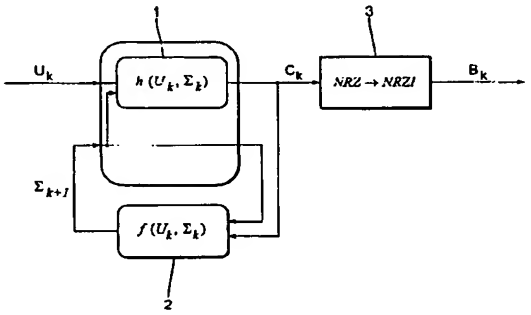
(54) Title: METHOD AND APPARATUS FOR MULTI-DIMENSIONALLY ENCODING AND DECODING



(57) Abstract: The invention relates to a method of multi-dimensionally encoding a user data stream of user words into a channel data stream of channel words evolving in a one-dimensional direction of infinite extent. The invention relates further to a corresponding method of decoding. In order to implement certain two- or multi-dimensional coding constraints and coding geometries which lead to higher storage densities and improve the coding efficiency, a method of encoding is proposed wherein:- a user word is encoded into an NRZ channel word by selecting said NRZ channel word from a code table depending on said user word and the current state of an underlying finite-state-machine, wherein an NRZ channel word comprises a sequence of NRZ channel symbols of NRZ channel bits having a one-dimensional interpretation along said one-dimensional direction and wherein states of an underlying finite-state-machine describing the characteristics of the multi-dimensional code are defined by NRZI channel bits of the previous channel word and by NRZ channel symbols of the current channel word,- the NRZ channel symbols are transcoded into NRZI channel symbols by a one-dimensional 1T-precoding operation including an integration modulo 2, said 1T-precoding operation being carried out along said one-dimensional direction of infinite extent, and - said finite-state-machine is put into a new state selected from said code table depending on said user word and the current state of said finite-state-machine together with encoding a user word into a channel word.

WO 03/092004 A1